

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

DAKOTA ZEPHYR

May, 1940

VOL 5 NUMBER 2

Published by: The Soil Conservation Service
and S. D. Extension Service

Brookings, South Dakota

Ross D. Davies
State Coordinator

Ralph E. Hansen
Extension Soil Conservationist

* * * *

Dear Cooperator:

Observations at Winner-Dixon Show Advantages of Soil Covering

The crop residue mulch system of farming promises to meet a definite need for a tillage practice that will conserve moisture and at the same time control both wind and water erosion in the area around the Winner-Dixon Soil Conservation Service Project, according to Dan E. Cass, Project Manager. This method consists of using sub-surface tillage that will maintain a covering of crop residue and dead weeds on the surface and at the same time properly work the soil and kill the weeds.

The straw mulch idea has been used for a long time in different sections for the growing of special crops, and has been used to a limited extent for controlling erosion. However, recent work by F. L. Duley and L. L. Kelley of Nebraska, in cooperation with the Soil Conservation Service, indicates excellent possibilities of using this crop mulch idea for the growing of field crops throughout this territory.

Crop Residue Beneficial

The following results show the benefit of a crop residue mulch on the surface of the soil as it affects the rate of intake of moisture on sod and crop land with and without the mulch: On native sod land where the grass was left 18" high, the rate of the intake of moisture at the end of 90 minutes was 3.3 inches per hour. On the same sod land where the grass was cut short and all of the residue removed, the intake rate was only .65 inches per hour at the end of 90 minutes.

In comparisons on crop land that was cultivated and left bare, the rate of intake of moisture was .49 inches per hour at the end of 90 minutes, whereas, on the same type of land that was cultivated and in addition covered with straw, the rate of intake was 3.50 inches per hour at the end of 90 minutes.

The above results show that the crop residue mulch has a very decided

effect on the amount of moisture that will penetrate soils from a heavy rain. The explanation made by the authors in the report of their research work in Nebraska (Research Bulletin No. 112) is that during a continuous rain a thin, compact layer is formed on the top of bare soil by the beating of the rain-drops so that the intake rate is greatly reduced. On soils covered with a straw mulch no such hard layer is formed and the penetration rate of moisture is much higher.

Mulch Cuts Evaporation

Another advantage of the mulch is to reduce evaporation. The average evaporation rate in South Dakota is 35 inches of moisture from a free water surface per year. Tests indicate that the evaporation rate from soil is reduced one-half where a straw mulch cover is maintained compared with evaporation from bare soil.

Since the moisture is the limiting factor for crop growth in this area, it is evident that the crop residue mulch system of farming will find a definite place and be generally used in this area upon the adaptation of tillage equipment to carry out this practice to the best advantage. Farmers on the Winner-Dixon Project are cooperating to give this practice a thorough trial in preparation for grain and row crops as well as for crop residue, summer fallow and fall tillage.

* * * * *

Changing Fences Unnecessary in Going over to Contour Farming

Do fences have to be moved when changing from up and down hill farming to contour farming? The opinion of the Alcester CCC camp, based on four years of experience is:

"Small farms of a quarter section or less can be changed from up and down

hill farming to contour farming without changing fences. However, it is often desirable to change fences, in order to take advantage of land topography, in working out the conservation plan for the farm. The only fields needing permanent fences are pastures. An electric fence to enclose an area for temporary pasture works very well.

"As an estimate, based on the farms in this area, we would say that 70 percent of the farms changed some fences when they changed to contour farming; about 30 percent of the fences on these farms have been changed."

* * * * *

Whitewood Man Builds Dams Capable of Holding Two Year Water Supply

J. P. Jensen, Whitewood, has built two reservoir dams in a 500-acre native pasture, in cooperation with the SCS-CCC camp at Fort Meade. In the past he had a small dam, fed by a seep, which went dry the forepart of July, and he was unable to get much good out of this pasture after July 1.

He says, "When the dams are filled I will have a two-year supply of water. These dams will increase the value of the pasture to the extent of several hundred dollars annually. It will also help in flood control." Considerable gullying had already taken place in this pasture prior to the inauguration of the range management program.

When asked how the reservoirs would increase the value of his land, Jensen stated, "It will greatly increase the carrying capacity of this range, which heretofore has been of little value to me due to the shortage of water." Mr. Jensen is very enthusiastic about the program, according to Carl Entorf, Lawrence county extension agent.

* * * * *

New District Being Organized Just
East of Rapid City in Pennington

Jones, Frank Eberle, Earl Cox, and William Hilmer.

"Pennington Soil Conservation District" is the name of a proposed district now being organized a few miles east of Rapid City. This district lies along Rapid Creek and comprises about 80,000 acres in an area abounding with possibilities for a water spreading and water development program.

The hearing was held March 7, and from the evidence presented, the State Committee decided there was need for creating a district in this area. From the minutes of the hearing, the following testimony shows the necessity for inaugurating soil conservation practices in this area:

"Up in our section we are mostly interested in contour farming. The land is quite rolling. Ditches and gullies are forming. We can hardly get around with machinery. If we don't do something to stop that we will have nothing but gullies and stony hills left....It is no use to lay out contour furrows if we don't get them perfect. They will be either up or down hill and let the water get away, whereas if we can hold the water back it will help save our soil.....Two years ago we had five inches of rain in one afternoon which took out bridges for seven miles. If we could have held some of that water back the bridges would not have gone. The extra water saved would have helped a lot."

Educational activities have been conducted by Raymond Lund, county agent, who is assisting the temporary committee in establishing this project. Ballots have been mailed to the land owners, and it is anticipated the referendum will be held sometime the latter part of May. The temporary committee heading the organization of this district is composed of Jens Keilstrup, Seth Hulbert, George Eggers, Lawrence

Finds No Difficulty in Keeping
Contour-Planted Corn Weed-Free

Corn drilled on the contour can be kept as clean as checked corn provided the operator gets into the field early. On the A. P. Guburd Farm which was visited on the Bon Homme county tour last summer, the corn field was drilled on the contour. It was kept clean and yielded an average of sixty bushels per acre.

If the corn is surface planted, a common harrow is an excellent machine for destroying weeds just as they are coming up. The operation may be started before the corn emerges and continued until the corn is five or six inches high. The teeth, of course, need to be set so as to raise the frame of the drag high enough to pretty well clear the corn in order that the drag frame will not break the corn off or drag it out of the ground.

A rotary hoe is also an excellent machine to use while the corn is still small and may be continued until the corn is twelve to eighteen inches high.

The weed control on any corn field is critical while the corn is small. The machines mentioned above will take care of the weed problem very well during the emergence and first few inches of growth. After the corn is several inches high, following the above treatment, an ordinary corn cultivator will handle the weed problem without any particular difficulty.

Contour listed corn can be kept clean by the regular procedure in caring for listed corn. There is no particular difference between listed corn on the contour and in straight rows up and down hill.

North Union District Covers

180,000 Acres; 325 Attend Hearing

The 180,000-acre Sioux-Brule Soil Conservation District is being organized in the northern part of Union County. The hearing, attended by 325 people, was held in Alcester on Monday, March 25. A temporary committee composed of P. McKillip, John Dawson, S. Thompson, L. Stoutenberg, and W. Lyle are taking the lead in setting up this conservation project.

The area within the proposed district contains about 180,000 acres in the northern part of Union County, and is named after the Sioux River and the Brule Creek which drain the territory. There are 1,800 land occupiers and 1,017 landowners in the district. Ballots have been mailed to the land owners and the referendum will be held about June 1.

The area included in this proposed district has been within the Alcester CCC camp work area for the last four years. As a result, a number of farmers are using conservation practices, and many of the newer methods have already been demonstrated and proved successful.

L. V. Ausman, county agent, has held meetings, released news stories and circular letters in cooperation with the temporary committee to explain the district set-up. The area selected for district organization is the hilly part of the county, and, as brought out at the hearing, "it has already suffered severely from water erosion."

* * * * *

In 1939, Joe Burger of Amherst planted a shelterbelt and a wildlife planting with 90 percent survival, not counting the evergreens. These trees have made excellent growth as he gave them very good care, and many of his trees are five to seven feet tall.

New Bulletin

"Soil Conservation Pays" is the name of a new pocket-sized bulletin just published by the South Dakota Extension Service. This bulletin shows in detail the answers obtained from a questionnaire sent to the cooperators under the Extension Demonstration program. It lists in tabular form the replies to a number of questions in regard to certain conservation practices and also gives typical answers.

Experiment Station results on the benefits of contour farming and terracing are also included. A study of the value of contour farming in the Alcester, S. D. area is another feature.

Copies of this new bulletin may be received by writing to the Extension Service at Brookings and asking for Special Extension Circular 49.

Clay Supervisors Named

Henry N. Abild of Vermillion and Edwin C. Landeen of Beresford were appointed by the State Soil Conservation Committee to act as supervisors in the Clay County Soil Conservation District. The district charter has been obtained, and an election for additional supervisors held. Elected were Garlin Jensen of Wakonda, E. A. Gronlund of Volin, Albert T. Paulson of Centerville.

Mr. Abild is chairman of the group, Landeen vice-chairman, Jensen treasurer, and County Agent Hagen Kelsey secretary. Activities have begun in the district, and the CCC camp at Alcester is assisting the supervisors with their program.

Basin Listing Needs Dams Every 5
Feet Instead of 10, Brchan Says

On the Adolph Brchan farm in Brule County in 1939, the basin lister was used in seeding corn on small grain stubble. He expects to increase the amount of basin listed corn this year. He believes that the dams should be constructed every five feet instead of every ten feet as he had them last year. This would hold more water on steeper slopes. He also advocates basin listing, using dams every ten feet, on contour listed corn and sorghum. This would eliminate accumulation where the rows deviate from the true contour.

Just after the corn was up last year, a 2 to 2½ inch rain fell in about two hours. The basins held the water on slopes of up to 4 percent, but broke on the steeper slopes. Water erosion and loss from washed out corn was considerably less, however, than on a nearby up and down listed field. The dams in the latter field were plowed out after the first cultivation.

Accurate yield comparisons of this field to others on the farm are not available. Brchan states, however, that this field remained green longer during the dry fall than nearby fields, and that a slight increase in yield could be noticed. No decrease in the stand, due to the filling of the dams in the lister rows, could be noticed as the corn grew right through them.

* * *

Cooperators in Tri-County District
Ask For Irrigation Help and Equipment

Several cooperators who requested technical assistance and use of suitable equipment from the Tri-County Soil Conservation District, through the district supervisors, have had fields of suitable soil prepared for irrigation or water spreading during the past summer.

Water spreading or flood irrigation is the diverting of run-off water from draws or streams and distributing it over the desirable field. Irrigation is distributing water for a storage reservoir or from a running stream onto a desirable field.

Burt Datin, Ed Delehan, Hans Boke, and Mike Fischback have flood irrigation systems installed on a total of 44 acres. More sites for such installations are available both on their farms and others. Three of the above places were flood-irrigated last May 25 when about one and one-half inches of rain fell in a very short time. The effectiveness of the systems was proven in this test. The need of controlling the amount of water entering the system of dikes and ditches was shown. Mr. Boke's field was the only area that had an established stand of native grass and alfalfa. The increased yield of hay due to the additional water was very evident on this field.

This last fall, with the use of district equipment, George Shepard constructed an earth dam to form a reservoir for irrigation water on a side draw of Brushie Creek. Through the earth fill was placed a 10-inch corrugated culvert. Irrigation water to bottom lands below is controlled by a manually operated cast iron slide headgate. Thirty acres of bottom land will eventually be irrigated from this reservoir. Mr. Shepard has had experience with irrigating bottom lands in the past, and is very enthusiastic about the results.

Flood water from spillways of some of the 45 dams constructed by the Tri-County District, in cooperation with the AAA range program, run over "bench lands" or wide flat swales. Such conditions make long lasting spillways and additional use and returns from run-off water.

* * *

Corn Steals Topsoil on Hills; Effects Generally Not Noticed

South Dakota hill farmers have long realized that corn steals topsoil from sloping fields.

A scientist, Dr. Harold L. Borst, of the Soil Conservation Experiment Station near Zanesville, Ohio, says hill farmers had better begin thinking about eliminating "pickpocket" corn from their steepest slopes. Dr. Borst backs up that statement with scientific evidence unearthed in five years of exacting studies on experimental plots.

"Prosecutor" Borst believes a summary of only one of his multiple experiments--conducted in cooperation with the Ohio Agricultural Experiment Station--would be enough to convince any open-minded "juror." This was a four-year comparison of erosion losses on small plots of land planted continuously to corn, unfertilized; continuous corn, fertilized; and corn in a four year rotation of corn, wheat, and two years of meadow.

The soil loss under continuous corn, unfertilized, was 77 tons an acre each year! This is equal, Dr. Borst points out, to the loss of about one-half inch of topsoil a year, or the loss of all the topsoil within 20 years! The fertilized plots of continuous corn lost more than 62 tons of topsoil each year, which, Dr. Borst points out, was a slight reduction but perhaps just as costly.

But the prize finding--the final clincher in the case against corn--was in the four-year rotation study. The soil loss from the corn in the rotation was still serious--38 tons an acre. In analyzing the experiment, Dr. Borst found that practically all of the soil saving resulted from the wheat and meadow stages of the rotation--the losses ranging from eight tons for

wheat to almost nothing for meadow. Most of the 38 tons of soil escaping from the corn plots in rotation got away during the April to November period when the corn crop was being produced.

There are several reasons why corn is regarded as the most erosive hill land crop, Dr. Borst points out. Among them are: The soil is kept loose and broken up finely by cultivation; more than half of the heaviest rains each year concentrate during the summer months; and, the most intense rains--those having the greatest soil-washing capacities--occur during June, July, and August when corn planting and cultivation leave the ground in its most vulnerable condition.

* * *

Extension Demonstration Farm Shows Contouring Profitable

August A. Dolney, cooperating on an Extension demonstration farm in Day County, finds contour farming practical and profitable.

Mr. Dolney started contour farming on 80 acres of his 160 acre farm in the spring of 1939. He was so well pleased that he decided to include the entire cropland acreage in 1940.

Dolney says, "There is a saving of at least 1/5 of the fuel cost. The tractor worked in high on the contour; when I was cultivating up and down hills, I was always shifting which increased fuel consumption and slipping. My corn fired on fields not on the contour, while my corn on the contour ran 35 bushels per acre. The wheat yield was estimated to be up 20 percent, the flax yield 35 percent, and the barley showed an increased growth. Contour farming is easy on equipment and there is less sticking in pot holes because most of the water is retained where it falls."

Soils Survey Nearly Completed
in American Creek District

The American Creek Soil Conservation District has the soils survey nearly completed on the original area. Only 10 sections remain to be surveyed out of the 180,000. The survey consists of determining the soil types and their boundaries; and then making a map of them for a permanent record. Portions of the additions to the District have also been surveyed.

According to the survey, there are no true sands in the District except those brought in by river wash, or that are down below the top soils. The very heavy upland soil is classified as Boyd clay, while the moderately heavy upland soils are Boyd silty clay loam, and Lyman silty clay loam.

The bottomland soils are classified as Verdel clay for the heavy, Verdel silty clay loam as the moderately heavy; while the moderately sandy soils are classified as Laurel, and Los Animas very fine sandy loam. Pierre clay and Lismas clay are found in the Missouri and White River areas known as the "rough land" or "brakes." The Manganoese bearing hills are classified as clay outcrop, while the pot holes commonly called lake beds have soils classified as McKenzie and Butler clays.

By comparison, the District's soil men find that the heavier soils are more subject to both wind and water erosion. Actual erosion is much more noticeable where there is a lack of crop cover, or crop residue cover. On the native grass land, overgrazing has been the main factor in causing a depletion of cover.

Cover crops have a greater benefit in controlling erosion on the heavier soils due to the fineness of the soil particles. Water has a tendency to run off faster from heavy soils.

Overgrazing, also, has a more harmful effect on the clay soils.

* * * * *

S. D. Farming Conditions Uncertain:
Must Plan for Wet or Dry Weather

An Omaha newspaper on the 26th of November ran the following editorial relative to Nebraska:

"The fall of 1939 now becomes the driest fall on record A large part of our water resources still go unused. The will to use them, the will to conserve flood water for the seasons of deficiency becomes stronger every day. What we have to face is a problem of constant and recurring deficiency of unfavorable timing of rainfall Because our state lies on the middle border, not quite in the arid zone, not quite in the humid, we must be prepared to cope with perpetual uncertainty. The best armor in the struggle is complete and unceasing control of the water that falls--the water which flows in our streams and water that is stored beneath the soil."

That some editorial could very easily have been written for any paper in South Dakota. Every Englishman, it is said, passes through life clinging to the handle of an umbrella. Nevertheless when actual accounts are figured up it is found that the total rainfall in London is less than in southeastern South Dakota. London gets about 26 inches of rainfall a year and this state has areas that beat that. London has frequent gentle rains coming on 200 days of the year, whereas, most of our rains are classed as torrential, or flash or runoff rains. It is not the amount of rain that falls that is important but how it comes, when it comes, how we take care of it, and other factors that determine soil and water losses.

UNITED STATES
DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Penalty for Private Use to Avoid
Payment of Postage, \$300

Ross D. Davies, State Coordinator
Brookings, South Dakota

Official Business